**CHEMISTRY – PAPAR –II**

(English –version )

**MODEL  QUESTION  PAPER**

**(For the academic year 2021-2022 only)**

**Time : 3 Hours**                                                    **Maximum Marks : 60M**

## SECTION – A

I.    **Very Short Answer Type Questions: Answer Any Ten of the following Questions: 10× 2 = 20M**

   **1)**  How many lattice points are there in one unit cell of FCC lattice?

   **2)**  What are f-centers?

   **3)**  What is Frenkel defect?

   **4)**  What are isotonic solutions? Give example

   **5)**  Calculate the molarity of a solution containing '5' grams of NaOH in 450 ml of solution.

   **6)**  Rate constant of a first order reaction is $200s^{-1}$ . Find its half life period ?

   **7)**  The moist air becomes dry in the presence of silica gel. Give reason for this.

   **8)**  What are lyophilic sols ? Give example

   **9)**  HF is a liquid white HCl is a gas. Explain

   **10)**  Nitrogen molecule is highly stable. Why?

   **11)**  What is an ambidentate ligand? Give examples

   **12)**  State faraday's  $2^{nd}$ law of electrolysis ?

   **13)**  What is Zwitter ion? Give an example.

   **14)**  What are essential amino acids. Give two examples

   **15)**  Arrange the following bases in the decreasing order of $p^{b}$

   $C_6H_5NH_2, C_6H_5NH_2, C_6H_5NHCH_3, (C_2H_5)_2NH$
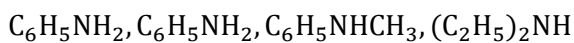
**SECTION – B**

II.   **Short Answer Type Questions: Answer Any Six of the following Questions: 6×4 = 24 M**

**16)** Derive Bragg's equation

**17)** Explain effect of temperature on rate of reaction

**18)** Give differences between physical adsorption and chemical adsorption.

**19)** Name the dispersed phase and dispersion medium in the following colloidal systems.

   (i)      Fog

   (ii)     Smoke

   (iii)    Milk

   (iv)     Cloud

**20)** Give balanced equations of the following reactions of $HNO_3$

   **a)**     $cu + dilHNO_3$

   **b)**     $Zn + concHNO_3$

   **c)**     $I_2 + HNO_3$

   **d)**     $S_8 + HNO_3$

**21)** Explain the structures of $'SF_4$ 'and ' $SF_6'$

**22)** Explain the hydrolysis reactions of $XeF_2$ and $XeF_4$ with balanced equations

**23)** Using IUPAC names write the systematic names of the following

   (i)      $[Ni(CO)_4]$

   (ii)     $[Fe(CN)_6]_3$

   (iii)    $K_3[Fe(CN)_6]$

   (iv)    $[Ti(H_2O)_6]^{3+}$

**24)** Explain Werner's theory of coordination compounds with suitable examples

**25)** What are Homoleptic and Heteroleptic complexes? Give one example for each.

**26)** What are monosaccharides. Give two examples of reducing sugars ?

**27)** Ethanol with $H_2SO_4$ at 443 K forms ethene while at 413 K it forms ethoxy ethane.
   Explain the mechanism

**28)** Explain why aryl halides are less reactive than alkyl halides towards nucleophilic  substitution
   reactions

**29)** Give a note on (a) Carbyl amine reaction and (b) Diazotisation.

## SECTION - C

**III.   Long Answer Type Questions: Answer Any Two of the following Questions: 2× 8 = 16 M**

**30)** (a) Define Molarity, Normality, Molality, Mole fraction ?

(b) What is relative lowering of vapour pressure? How is it useful to determine the molar mass

of solute.

**31)** (a) State and explain Kohlrausch law of independent migration of ions.

(b) A solution of $CuSO_4$ is electrolysed for 10 minutes with a current of 1.5 amperes.

What is the mass of copper deposited at the cathode?

**32)** How is chlorine prepared in the laboratory (or) Deacon's Method? How does it react with the

following

(i)   $Na_2SO_3$

(ii)   Excess $NH_3$

(iii)   $Ca(OH)_2$

(iv)   hot and conc. NaOH

**33)** Give a note on

(i)         Aldol condensation

(ii)        Cannizzaro reaction

(iii)        Williamson synthesis

(iv)        HVZ reaction